CLAIMS

What Is Claimed Is:

1. A method of identifying a defective location in a conductive structure formed in a semiconductor wafer, the method comprising:

applying heat to the conductive structure at an intensity that changes over time;

measuring electromagnetic radiation from an area of the conductive structure, as a function of changing intensity of applied heat, the area of a single measurement being sufficiently large to cover a plurality of vias;

comparing the single measurement with a plurality of measurements obtained by performing said measuring in other areas while applying heat; and

providing an indication about a suspected defect in said area, in response to the comparison.

2. The method of Claim 1 further comprising:

receiving said wafer with said conductive structure formed therein to comprise a first conductive layer patterned into at least one island, said island being connected to at least one via.

3. The method of Claim 2, wherein:

the conductive structure further comprises a second conductive layer that is unpatterned and forms a sheet of conductive material; and

each via is located between the first conductive layer and the second conductive layer.

4. The method of Claim 2, wherein:

the conductive structure further comprises a second conductive layer that is patterned to form a line of conductive material; and

each via is located between the first conductive layer and the second conductive layer.

5. The method of Claim 1, wherein the conductive structure comprises a via chain.

6. The method of Claim 5, wherein:

each via is connected to at most one trace in a first conductive layer and to another trace in a second conductive layer;

said plurality of vias are located periodically in space along a direction; and

said area has a dimension that is several times larger than a pitch between two vias in said plurality of vias.

7. The method of Claim 1 further comprising:

receiving said wafer with said conductive structure formed therein to comprise a first conductive layer patterned into a shape selected from a group consisting of a serpentine and a comb; and

wherein said vias are located between the first conductive layer and a second conductive layer and at least a majority of said vias form electrical connections between said first conductive layer and said second conductive layer.

8. The method of Claim 7, wherein:

the second conductive layer is also patterned into the shape selected from said group.

9. The method of Claim 7, wherein:

the second conductive layer is unpatterned and forms a continuous sheet of conductive material.

10. The method of Claim 1, wherein:

said determining includes computing a standard deviation of said plurality of measurements and computing a baseline using said standard deviation.

11. The method of Claim 10, wherein:

said baseline is an average of said plurality of measurements.

12. The method of Claim 1, wherein:

said plurality of measurements are performed at least along a direction defined by a plurality of vias located sequentially one after another in said conductive structure.

13. The method of Claim 1, wherein:

reflection of a laser beam is measured during said measuring; and

the laser beam illuminates said area of the conductive structure.

14. The method of Claim 1, wherein:

a first beam is incident on a first trace in the conductive structure during said measuring; and

a second beam is coincident with said first beam during said measuring, the second beam having a wavelength greater than a pitch between two vias in said conductive structure.

15. The method of Claim 1, wherein:

said measuring is performed while moving a stage carrying the semiconductor wafer containing the conductive structure;

said measuring is performed continuously, thereby to obtain an analog signal; and

said analog signal is used during said determining.

16. The method of Claim 10, wherein:

the baseline undulates across successive areas; and

a change in said baseline at any area relative to a previous area is several times smaller than a corresponding change in said area identified as having said defect.

17. The method of Claim 1 further comprising:

illuminating said area with a beam of electromagnetic radiation of intensity varying over time such that each via in said area has a temperature in direct proportion to said intensity at any instant in time.

18. An apparatus for identifying a defect in a conductive structure, the apparatus comprising:

means for applying heat to a region of the conductive structure, the region having a diameter greater than a pitch between two vias in said conductive structure;

a sensor for measuring a signal indicative of temperature of a portion of the conductive structure heated by conduction of the applied heat therethrough; and

means for determining presence of the defect in the conductive structure, based on a plurality of measurements including the measured temperature.

19. The apparatus of Claim 18, wherein said means for applying heat comprises a laser having a wavelength greater than said pitch

20. The apparatus of Claim 18, wherein said means for applying heat comprises a source of an electron beam.

21. The apparatus of Claim 18, wherein said sensor for measuring comprises a thermal imager.

22. The apparatus of Claim 18 further comprising a laser having a predetermined wavelength, wherein said sensor for measuring comprises:

a photodiode sensitive to electromagnetic radiation of said predetermined wavelength, said photodiode being located in a path of reflection of said electromagnetic radiation when said electromagnetic radiation from the laser is incident on the conductive structure.

23. The apparatus of Claim 18, wherein said means for determining comprises a personal computer.

24. A structure comprising:

a plurality of vias formed through a substrate; and

a plurality of conductive islands formed on the substrate, each conductive island being located over only one via in said plurality of vias.

25. The structure of Claim 24 wherein at least a majority of islands are electrically connected to a corresponding majority of vias.

26. The structure of Claim 24 further comprising:

a plurality of conductive lines, each conductive line being located underneath several vias in said plurality of vias.

27. The structure of Claim 24 further comprising:

a sheet of conductive material located underneath said plurality of vias in said substrate.

28. The structure of Claim 24 wherein said vias and said conductive islands are located in a scribe line between two adjacent dies in a wafer of semiconductor material.

29. A structure comprising:

a plurality of vias formed through a substrate;

a sheet of conductive material located underneath said plurality of vias in said substrate; and

a plurality of conductive islands formed on the substrate, each conductive island being located over at least one via in said plurality of vias.

30. The structure of Claim 29 wherein each conductive island is located over only one via.

31. A structure comprising:

a plurality of vias formed through a substrate;

a line of conductive material located underneath said plurality of vias in said substrate; and

a plurality of conductive islands formed on the substrate, each conductive island being located over at least one via in said plurality of vias.

32. The structure of Claim 31 wherein each conductive island is located over only one via.